

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A disk recording and/or reproducing apparatus comprising:

a spindle chassis for rotationally supporting a turntable on which an optical disk, to/from which information is recorded and/or reproduced, is placed;

a pickup chassis, rotationally supported on said spindle chassis, for movably supporting an optical pickup device for writing and/or reading said information to/from said optical disk and being movable toward and away from the turntable; and

a tilt mechanism for adjusting a tilt angle of said optical pickup device with respect to said optical disk by rotating said pickup chassis with respect to the spindle chassis, said tilt mechanism comprising:

a stepping motor for rotating said pickup chassis with respect to said spindle chassis;

and

a control circuit for driving said stepping motor to set the tilt angle at a predetermined neutral position without a tilt sensor input;

wherein said control circuit drives said stepping motor to obtain a reference position by causing a loss of synchronism.

2. (Cancelled)

3. (Previously presented) A disk recording and/or reproducing apparatus according to claim 2, wherein said control circuit drives said stepping motor by outputting a signal representing a number of steps corresponding to a tilt angle between the predetermined neutral position and the reference position.

4. (Previously presented) A disk recording and/or reproducing apparatus according to claim 1, wherein the predetermined neutral position is indicative of a middle position between a tilt minimum position and a tilt maximum position.

5. (Previously presented) A disk recording and/or reproducing apparatus according to claim 1, wherein the predetermined neutral position is indicative of a position at which an optical disk having no warp is reproduced most preferably.

6. (Previously presented) A disk recording and/or reproducing apparatus according to claim 3, wherein said control circuit includes a memory for storing the predetermined neutral position.

7. (Previously presented) A disk recording and/or reproducing apparatus according to claim 2, wherein said stepping motor is assembled on said tilt mechanism in such a manner that an electrical phase of said stepping motor is coincident with a mechanical phase of said tilt mechanism.

8. (Amended) An apparatus for adjusting the tilt angle of an optical pickup device, comprising:

a first chassis assembly for rotationally supporting a recording medium driving means;
a second chassis assembly rotationally supported on said first chassis assembly, for supporting a head device for writing and/or reading information to/from said recording medium;
a tilt drive mechanism mechanically engaged with said second chassis assembly; and
control circuitry, having no tilt sensor input, electrically connected to said tilt drive mechanism, said control circuitry outputting a control signal to said tilt drive mechanism;

wherein said tilt drive mechanism comprises:

a stepper motor connected to receive the control signal output from said control circuitry; and

a cam having a portion mechanically engaged with said stepper motor, and a spiral surface mechanically engaged with said second chassis assembly.

9. (Previously presented) An apparatus for adjusting the tilt angle of an optical pickup device according to claim 8, wherein said control circuit comprises a memory storage device.

10. (Cancelled)

11. (Cancelled)

12. (Currently Amended) An apparatus for adjusting the tilt angle of an optical pickup device according to claim 11, further comprising:

a protrusion extending from an end of said second chassis assembly, and located proximate said spiral surface; and

a biasing device having a fixed end and a free end, said fixed end being attached to said first chassis assembly, and said free end being in contact with said protrusion, thereby continuously biasing said second chassis assembly onto said spiral surface.

13. (Previously presented) A method of adjusting the tilt angle of an optical device tilt mechanism to a predetermined neutral position, the method comprising the steps of:

rotating a drive unit in a first direction until the tilt mechanism reaches a predetermined reference position; and

rotating the drive unit in a second direction, opposite to the first direction, a predetermined number of rotations, thereby positioning the tilt mechanism to the predetermined neutral position.

wherein the predetermined reference position coincides with a loss of synchronism between an electrically induced magnetic field in the drive unit and a mechanical magnetic field in the drive unit.

14. (Cancelled)

15. (Previously presented) A method of adjusting the tilt angle of an optical device mechanism according to claim 13, wherein the predetermined neutral position coincides with a position halfway between a tilt mechanism minimum tilt position and a tilt mechanism maximum tilt position.

16. (Previously presented) A method of adjusting the tilt angle of an optical device mechanism according to claim 13, further comprising the step of:

synchronizing an electrically induced magnetic field phase of the drive unit and a mechanical magnetic field phase of the drive unit, prior to rotating the drive unit in the first direction.

17. (Previously presented) A method of adjusting the tilt angle of an optical device tilt mechanism according to claim 16, wherein said synchronizing step comprises:

electrically energizing a portion of the drive unit; and
assembling the drive unit to the tilt mechanism with the tilt mechanism positioned to the predetermined reference position.

18. (Previously presented) A method of adjusting the tilt angle of an optical device tilt mechanism according to claim 13, further comprising the steps of:

retrieving the predetermined neutral position from a memory device, prior to rotating the drive unit in the second direction.

19. (Previously presented) A method of adjusting the tilt angle of an optical device tilt mechanism according to claim 18, further comprising the step of:

setting the predetermined neutral position, prior to rotating the drive unit in the first direction.

20. (Previously presented) A method of adjusting the tilt angle of an optical device tilt mechanism according to claim 19, wherein said setting step comprises the steps of:

positioning a reference optical disk proximate the optical device, said reference optical disk having no warp;
generating a read signal by reading information recorded on the reference optical disk;
setting the predetermined neutral position to coincide with a predetermined level of the read signal; and

storing the predetermined neutral position in the memory device.